



Innovative Technologies and Concepts for the Intelligent Deep Mine of the Future

I²Mine - Fit for Europe: The concept

Funding has been secured from the European Commission 7th Framework Programme for the I²Mine project, an initiative focused on the technological challenges the mining industry is currently facing including the exploitation of ever deeper deposits and the aspiration for an invisible, safe, zero impact mine. The project will be carried out by a consortium of 26 companies and academic institutions from 10 European countries.

The I²Mine concept is a perfect fit with the Raw Materials policy framework currently being implemented in Europe. I²Mine will develop the innovative methods, technologies, machines and equipment necessary for the efficient exploitation of minerals and disposal of waste, all of which will be carried out underground. This will dramatically reduce the volume of surface transportation of both minerals and waste, minimising the above ground installations and reducing the environmental impact. I²Mine will significantly contribute to the successful implementation of the European Raw Materials policies of securing the European minerals base, reducing import dependencies of mineral raw materials and sustainably providing mineral raw materials for Europe. I²Mine also improves the competitiveness and standing of the European equipment manufacturing industries.

I²Mine - Technological challenges

The I²Mine project marks the start of a series of activities designed to realise the concept of an invisible, zero-impact mine. It will concentrate on the development of technologies suitable for deep mining activities. These include but are not limited to:



Automine Operations - Sandvik

- high resolution 3D exploration methods for deep deposits
- high speed information and communication networks
- autonomous machinery for deep mineral extraction
- near face processing, preparation technologies and sorting methods
- an autonomous transport system for mass flow management
- underground waste management



The project will also encompass the development of new techniques for geological engineering methods and rock mechanics that will be demanded by deeper mines and the new technology. The focus will be on selective exploitation by new sensor based systems for material recognition, boundary layer detection and sorting operations.

The concept of a zero impact mine requires that less waste is produced during extraction and mineral processing is carried out underground. This requires the development of new and improved near to face processing methods, including efficient backfilling procedures.



Reef Miner - Sandvik

I²Mine - We take care of health & safety and the environment

Although the overall aim is to develop machinery as autonomous as possible, 100% remote operations will not be feasible. This means that health and safety issues and questions related to the working environment will also be addressed. In addition, the environmental implications and impacts will be taken into account.

I²Mine - The social dimensions

The project is expected to have a significant impact on the general community as it will show the ability of the extractive sector to establish a domestic supply of minerals for the EU with minimal environmental impact. The challenges for the minerals extractive industry are so numerous that comprehensive international cooperation is needed, both by the industry and wider society, in order to succeed. This is true not just for the technical challenges, but also for socio-economic and environmental ones. Working separately would lead to a slow development, something that is undesirable for both the mining industry and for the community. There is need for a new and modern vision for the whole industry based on a modern technical approach that encompasses all aspects of mining. The I²Mine project will mark the start of such an initiative: the invisible, intelligent and zero-impact mine of the future.

During the project an open and transparent dialogue will be established with the scientific community, mining industry, society, regulators and other stakeholders. This will initially involve the promotion of the project by establishing a web site and the production of leaflets, brochures and posters. As the project proceeds, seminars and workshops will be held to discuss progress and receive feedback.

Contact

For additional information about the I²Mine project, receive regular updates or be part of the open dialogue, please register on the web site (www.i2mine.eu) or send us an email (pm@i2mine.eu). We welcome your comments on any part of the project and appreciate your contribution.

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Kittila Mine - Agnico Eagle